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REMARKS

Claims 1-7, as amended, remain herein.

1. Applicant thanks Examiners Hess and Dicus for the courteous interview granted applicant's attorney on January 29, 2003. Claim 1 has been amended in a sincere attempt to place the case in condition for allowance.

2. Applicant requests withdrawal of the finality of the present Office Action. The new art rejection under 35 USC 102 in Section 2 of the most recent Office Action is based on Kumazawa et al. EP 798 042, a counterpart of Kumazawa et al. U.S. 5,846,899 (already cited as a secondary reference in the 35 USC 103 rejection in Section 3 of the Office Action). At the interview, Examiner Dicus said that her intention was not to rely upon Kumazawa et al. EP 798 042, but rather on Kumazawa et al. U.S. 5,846,899, a reference of record. Even so, the change from using Kumazawa et al. as a secondary reference in an obviousness rejection of claim 1 to a new anticipation rejection against claim 1 based solely on Kumazawa et al. raises a new issue that precludes properly making the Office Action a final rejection. The finality should be withdrawn.

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3. Claims 1-7 stand rejected under 35 USC 112, second paragraph, as vague and indefinite because the phrase "in a direction of a diameter" is said to be confusing. At the interview, the Examiner indicated that this rejection is withdrawn.

4. Claim 3 was objected to because there was no space between "0.1" and "mm." At the interview the Examiner indicated that this rejection is withdrawn.

5. Claim 1 stands rejected under 35 USC 102(b) as anticipated by EP 0798 042 to Kumazawa et al. At the interview the Examiner said her intention was not to rely upon Kumazawa et al. EP 798 042, but rather on Kumazawa et al. U.S. 5,846,899, of record. This rejection is traversed.

Applicant respectfully submits that the description in the Office Action mischaracterizes this reference in the statement (broken into two parts):

'042 teaches a cordierite honeycomb body having excellent thermal shock resistance by coating the surface (outer wall) exhibiting a higher thermal expansion coefficient than that of the inner carrier containing inner walls

by coating with activated alumina on the outside wall where the thermal expansion coefficient of

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the outer coating on the body wall being [sic] larger than the thermal expansion coefficient of an inside partition wall.

Applicant respectfully submits that all this reference teaches is merely immersion coating a normally-extruded honeycomb extruded body with a washcoat under two special conditions. First, the washcoat is  $\gamma$ -alumina with a thermal expansion coefficient larger than the thermal expansion coefficient of the honeycomb structural body. Second, a volume shrink is generated when a high temperature is provided after application of the washcoat. See page 4, lines 12-18 of the reference:

In the present invention, in order to decrease a thermal expansion coefficient of the ceramic honeycomb catalyst comprising the ceramic honeycomb structural body and the carrier coated on a surface of the ceramic honeycomb structural body, two features of  $\gamma$ -alumina i.e. (1) thermal expansion coefficient being larger than that of the honeycomb structural body and (2) a volume shrink being generated on a high temperature are utilized.

That is to say, if the carrier coated on the ceramic honeycomb structural body is subjected to a heat treatment at a high temperature, a volume shrinkage occurs, and the generated shrinkage functions as a compressive stress with respect to the ceramic honeycomb structural body.

There is no discussion in the reference of applying the special alumina material on only the outside of the honeycomb extruded body.

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At the interview, the Examiner referred to the disclosure at col. 4, lines 20-32, especially the first sentence stating that the honeycomb structural body is immersed in the aqueous solution of the alumina and other ingredients. The Examiner takes the position that such an immersion will place a coating on the outside of the honeycomb body, thus causing the circumferential wall portion to have a greater thermal expansion coefficient (TEC) than the TEC of the interior of the honeycomb body.

Applicant submits that if the honeycomb structure is dipped into an aqueous solution of a catalyst carrier, then both the internal surface and the outer surface of the honeycomb structure are coated. Thus, if the honeycomb structure has, for example, a thermal expansion coefficient of 0.3 to  $0.6 \times 10^{-6}/^{\circ}\text{C}$  and the structure is coated with a catalyst carrier having a thermal expansion coefficient of 5.0 to  $6.0 \times 10^{-6}/^{\circ}\text{C}$ , then the resultant product would have an increased thermal expansion coefficient of 1.0 to  $1.5 \times 10^{-6}/^{\circ}\text{C}$  in both the inside partition walls and the outer circumferential wall. These figures are similar to those appearing in col. 3, line 61, to col. 4, line 9, of Kumazawa et al. '899 where the uncoated honeycomb structural body TEC is  $0.65 \times 10^{-6}/^{\circ}\text{C}$  and the coated carrier TEC is  $1.2 \times 10^{-6}/^{\circ}\text{C}$ .

A key point is that both walls are coated with a carrier for

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catalyst practically with the same thickness. As a consequence, the resultant product should have the same thermal expansion coefficient for the inside partition walls and the outer circumferential wall. (If the Examiner disagrees, she is asked to place on the record her reasons for her disagreement.)

Today, an artisan would not want to coat the circumferential wall of the honeycomb structure even, with a carrier for catalyst. This treatment is logical because it is a common practice not to load a catalyst on the circumferential wall to save the rare noble metals used as a catalyst. A large amount of the noble metals should be loaded concentratedly in the inside portions of the honeycomb structure to comply with stricter regulations regarding the emission of hazardous substances. In this respect, any catalyst coated on the circumferential wall does not work for the purification of the exhaust gas passing through the internal channels of the honeycomb structure.

Accordingly, honeycomb coating artisans are very concerned about how the honeycomb is to be coated. For example, it is evident among those artisans that a uniform coating of  $\gamma$ -alumina can not be achieved if silica or alumina other than  $\gamma$ -alumina is present on the surface of the partition walls. See the discussion in Paragraph 0006 of the present specification which reads:

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If a ceramic material such as silica and alumina which raises a thermal expansion coefficient is applied to the partition walls at this time, the more a quantity of the application is, the more the water absorption ratio falls, which cause a problem that a ceramic honeycomb structure cannot carry  $\gamma$ -alumina uniformly, that is, a catalyst cannot be dispersed uniformly.

Thus, an artisan would not try to coat the inside partition walls with the material other than  $\gamma$ -alumina. The artisan would be paying attention to the process of coating honeycombs and would not try to dip the whole honeycomb structure into an aqueous solution containing materials other than  $\gamma$ -alumina.

A further reason why no coating material would be on the circumference of a honeycomb dipped in a catalyst carrier coating material is that a conventional finishing step of blowing off extra coated material would remove that coating material. The specification at page 13, lines 9 and 10, refers to blowing off surplus liquid. This blowing-off step is a conventional means for removing a superfluous wash coating remaining on inside partition walls. During such a selective blowing-off of an extra amount of the wash coating located on the inside walls, one would not expect the wash coating to be retained on the circumferential wall. This expectation is a proper one because the quantity of the coating on the internal walls should be controlled by blowing-off at a level sufficient to guarantee the minimum amount capable of satisfying the required catalytic performance, while the coating amount of

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the circumferential wall should be minimized to save precious metal in view of its cost.

There is a significant (indeed, patentable) difference between the present invention and what is taught Kumazawa et al. '899. Col. 4, lines 42 to 61, of Kumazawa et al. '899 informs the reader that the volume shrinkage in the honeycomb structure is caused by subjecting the honeycomb structure coated with the carrier to heat treatment, thereby giving a large compressive stress to the structure. However, no mention is made of any stress applied from the circumferential wall to the inside partition walls.

Furthermore, Kumazawa et al. '899 teaches the use of  $\gamma$ -alumina to decrease the thermal expansion coefficient of the ceramic honeycomb catalyst by virtue of two features of  $\gamma$ -alumina, as discussed on col. 4, lines 33 to 40. This teaching is completely different from and irrelevant to the concept of the present invention.

Moreover, mere controlling the thermal expansion coefficient is not sufficient to achieve the object of the present invention. The data in Table 2 of the present specification establish that there is no practical difference in the thermal expansion coefficient at the outer circumferential wall as noted when

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considering Examples 2 (1.83, 1.81) and Comparative Example 7 (1.80, 1.85), and Examples 5 (1.68, 1.70) and Comparative Example 10 (1.77, and 1.79). However, one may observe easily the difference in the results of the thermal shock test of those samples: Example 2 (930) and Comparative Example 7 (820), and Example 5 (880) and Comparative Example 10 (860). In this respect, please note that the difference in results of the thermal shock test is evident where the honeycomb structure has thinner inside partition walls, as shown by evaluating the results of Examples 2 and Comparative Example 7, both of which have a thin partition wall thickness of 0.089 mm.

This difference comes not only from the thermal expansion coefficient property. That is, the difference in the structure is also important to attain higher thermal shock resistance of the honeycomb structure. The thicker outer circumferential wall is required to apply a stress from the outer circumferential wall to the inside partition walls, as depicted in instant Figs. 1 and 2. See also the description in Paragraph 0027 of the present specification.

To further define the origin of the stress given to the claimed ceramic honeycomb structure, claim 1 has been amended to add a further wherein clause reading:

and wherein a raw material for said outer

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circumferential wall is given in a thickness sufficient to apply a stress to the inside partition walls from the outer circumferential wall around a whole surface of the outer circumferential wall.

Support for this phrase is found in Paragraph [0018] explaining that the raw material is applied to the circumferential wall portion of the honeycomb structure to form the outer circumferential wall portion 3. See also Paragraph [0019] for a discussion of how the raw material is applied. See also Paragraph [0025] for a discussion of significance of this construction; see also Figs. 1 and 2.

The Examiner cites five reference passages to support the her position that Kumazawa et al. '899 applies the special alumina material on only the outside of the honeycomb extruded body. (Those passages are discussed below using the citation given in the Office Action to the equivalent Kumazawa et al. EP 798 042.)

1. Page 3, lines 51-58

This paragraph states:

Under such a circumstance, the inventors cut out a specimen having a length of 10 mm and section of 1 cell square from the catalyst prepared by coating the carrier at 550°C. on the ceramic honeycomb structural body having a thermal expansion coefficient of  $0.4 \times 10^{-6}/^{\circ}\text{C}.$ , and then peeled off the carrier from the specimen. Then, a thermal expansion coefficient of the thus prepared specimen was measured. As a result, a thermal expansion coefficient of the thus prepared specimen on which no carrier is coated is reduced to

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$0.65 \times 10^{-6}/^{\circ}\text{C}.$ , while that of the specimen on which the carrier is coated is  $1.2 \times 10^{-6}/^{\circ}\text{C}$ . That is to say, it is understood that a tensile effect due to the carrier coated on the ceramic honeycomb structural body is largely effected on a thermal expansion coefficient as compared with the wedge effect mentioned above.

The quoted paragraph merely describes cutting out an internal segment of 1 cell square and making TEC measurements before and after the carrier wash coating is removed. There is no mention of measuring any coating on the outside circumference of the entire honeycomb structural body.

2. Page 5, lines 5-20

The two paragraphs at this portion state:

Then, a heat treatment was performed in an electric furnace at a temperature shown in Table 1 with respect to the thus obtained ceramic honeycomb catalysts to obtain the ceramic honeycomb catalysts according to comparative example Nos. 1-3 and present invention Nos. 1-3. The number of specimens was five per respective temperatures. After that, samples were cut out from respective specimens at central and peripheral of end surface portions, central and peripheral of center of axial portion. Then, a thermal expansion coefficient in a range of  $40^{\circ}$ - $800^{\circ}\text{C}$ . of the end surfaces were measured, and the other four samples were used for a thermal shock test in an electric furnace. The thermal shock test was performed in the following manner. At first, the samples were set in the electric furnace maintained at  $600^{\circ}\text{C}$ . for 1 hour, and were put out from the electric furnace into a room. Then, an appearance of the samples was observed until the samples were completely cooled. At the same time, an overall surface of the samples was lightly rung by a thin metal stick. Then, if no cracks were observed and a ringing sound

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was a clear metal sound, the samples were assumed to pass such a temperature. If the samples passed, a temperature of the electric furnace was increased by 25°C., and the same observation and ringing was repeated until a crack was observed or the ringing sound became a dull sound. Then, a thermal shock strength was shown by a highest passed temperature. Respective mean values of the measured data were shown in the following Table 1.

The alumina is in the form of  $\gamma$ -alumina, after the heat-treatment.

This passage describes merely test conditions and how specimens were cut out of the ceramic honeycomb catalysts. There is no mention of measuring any coating on the outside circumference of the entire honeycomb structural body.

### 3. Table 1

The table presented data of 3 Comparative Examples (1-3) which were heated to only 550-800°C as compared to Kumazawa et al.'s Present Invention Examples (1-3) which were heated to 900-1100°C. The thermal shock strength was greater for the examples of Kumazawa et al.'s invention than for the comparative examples.

### 4. Page 4, lines 40-56

This portion describes Embodiment 1 where cordierite honeycomb structural bodies were immersed into and pulled up from

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a slurry of an aluminum nitrate solution containing commercially available active alumina and ceria powders. A table gives the properties of the  $\gamma$ -alumina and the ceria. This description merely explains how a wash coat is applied to a hollow cordierite honeycomb structure. There is no specific mention in this passage that the outer circumference is to be coated.

The Examiner alleges that Kumazawa et al. '899 use the same slurry composition and process as does applicant. But this slurry is used as a wash coat to apply to the inner cells to increase catalyst surface area. The slurry in the reference is not applied to the outside of the honeycomb body so that the slurry would deposit on the peripheral wall.

5. Page 4, lines 16-25

This paragraph states:

That is to say, if the carrier coated on the ceramic honeycomb structural body is subjected to a heat treatment at a high temperature, a volume shrinkage occurs, and the generated shrinkage functions as a compressive stress with respect to the ceramic honeycomb structural body. Moreover, since the carrier having a large thermal expansion coefficient is liable to be shrunk largely during a cooling state, a larger compressive stress is applied to the ceramic honeycomb structural body in this cooling state. Under such a condition, if heat is applied to the catalyst, the ceramic honeycomb structural body and the carrier are extended, but a tensile stress is not applied to the ceramic honeycomb structural body till a temperature at

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which a compression stress of the ceramic honeycomb structural body is zero. Therefore, the catalyst to which a heat treatment is applied does not reach to a tensile fracture stress until a temperature larger than that of the catalyst to which no heat treatment is applied, and thus the catalyst to which a heat treatment is applied is not fractured till a high temperature.

Although the Examiner contends that this passage "further teaches compressive stress is applied from the outer wall to the inside," applicant respectfully disagrees. This carrier coated on the ceramic honeycomb structural body is uniformly coated only on the internal partition walls. The catalyst maker does not intend to coat the outer circumference of the honeycomb body with this catalyst (an expensive one) because exhaust gas would not be passing over the outside portion of the structure. The exhaust gas will be passing only through the internal passage where turbulent flow permits good contact of the exhaust gas with the coating.

In conclusion, Kumazawa et al. '899 does not teach applying the wash coating material to the outside of the honeycomb body. Indeed, Kumazawa et al. '899 is silent regarding the thermal expansion coefficient difference between the inside partition wall

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portion and the outer circumferential wall portion. Accordingly, Kumazawa et al. '899 provides no motivation to obtain nor suggestion of obtaining applicant's result where stress is applied to the inside partition wall portions from the outer circumferential wall portion.

6. Claims 1, 2, and 4 were rejected under 35 USC 102(b) as anticipated by Hamaguchi et al. '275. This rejection is traversed.

The present invention involves modifying a ceramic honeycomb so the thermal expansion of the outer circumferential wall is greater than the thermal expansion coefficient of an inside partition wall portion. This structure causes stress to be applied to the inside partition wall portion from the outer circumferential wall portion as described in Paragraph [0025].

The advantage of the claimed structure also is described in Paragraph [0025]: the thermal shock resistance is increased, making it much harder to cause a thermal rupture of the honeycomb.

Hamaguchi et al. '275 teaches introduction of activated alumina inside the partition walls of a cordierite honeycomb structural body. These honeycomb bodies have smaller thermal shock resistance degradation by coating a high specific surface

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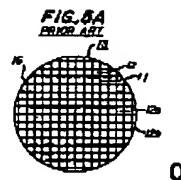
area-possessing material (i.e. the activated alumina) having a higher coefficient of thermal expansion than that of the cordierite carrier and a catalytic component of the carrier. See col. 3, lines 12-20. Hamaguchi et al. '275 provides no teaching or suggestion that the thermal expansion coefficient of the outer circumferential wall is to be greater than the thermal expansion coefficient of the inside partition wall portion.

In the Response to Argument portion of the Office Action on page 6, the Examiner contends that "[t]he coating on the outside of the carrier is equivalent to an outer circumferential wall. The TEC is higher on the coating than inside the carrier as explained by Hamaguchi at col. 3, lines 12-20." That cited passage reads:

It is an object of the present invention to eliminate the above-mentioned drawbacks, and to provide cordierite honeycomb structural bodies which are suitably used as honeycomb structural catalyst carriers having smaller degradation of thermal shock resistance by coating a high specific surface area-possessing material of a higher coefficient of thermal expansion than that of the cordierite carrier and a catalytic component the carrier.

The Prior Art illustration in Fig. 5A of Machida et al. '446 copied below shows a typical honeycomb structure.

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The coating that is being applied by Hamaguchi et al. '275 is on all of the internal cell walls defined by these cordierite partition walls. There is no coating disclosed placed on the outside circumference of the entire honeycomb body structure.

With this uniform high TEC applied throughout the entire inside structure, there can be no differential between a higher TEC material on the outside and a lower TEC material on the inside as instant claim 1 specifies. Accordingly, there can be no proper teaching of the honeycomb structure of claims 1, 2 and 4 from this reference. Review and withdrawal of this rejection is requested.

7. Claims 1, 2, and 6 are rejected under 35 USC 102(b) as anticipated by Machida et al. '446. This rejection is traversed.

Machida et al. '446 teaches eliminating the wasteful use of a catalyst by selectively sealing incomplete cells at an outermost peripheral portion of a honeycomb structural body with ceramic materials; see the Abstract.

Machida et al. '446 provides no teaching or suggestion that

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the thermal expansion coefficient of the outer circumferential wall is to be greater than the coefficient of the inside partition wall portion. Machida et al. '446 merely teach the partial coating of selective cells inside the outer circumferential wall. Thus, the invention disclosed in Machida et al. '446 is not relevant to the present invention because a required stress can not be applied to the inside partition walls with the partial coating of selective cells inside the outer circumferential wall. Accordingly, review and withdrawal of this rejection is requested.

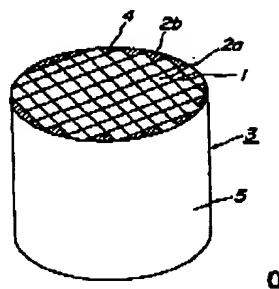
The Examiner contends that the materials and process used are the same as applicant and thus asserts that the characteristics of claim 1 would be expected to be similar absent any evidence to the contrary. However, the portion of the reference cited by the Examiner in the first Office Action, namely col. 6, lines 5-26, merely describes how to examine the cell stuffing areas and how to test the catalyst-loading capability. This cited section describes a two-step process.

First, the stuffing rate was examined on the randomly selected ten specimens. After confirming the absence of the stuffing (stuffed) portions in the honeycomb structural bodies, the upper side surfaces of the outer circumferential portion of the honeycomb structure were sealed by the silicon rubber sponge

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to prepare for the catalyst loading, as shown in Fig. 2 of Machida et al. '446, copied below.

FIG. 2



Then, as described in col. 6, lines 18-31, the catalyst was applied in the form of an alumina-ceria powder slurry washcoat. The resulting catalyst carrying performance was evaluated as shown in Table 1.

In the present invention, on the other hand, the thermal expansion coefficient of the outer layer is increased by adding additional material to the outer periphery of the extruded honeycomb. This increase can be accomplished simply by applying additional material to the outer periphery of an already extruded honeycomb as illustrated in Fig. 1(b) copied below. Another way to achieve an increase is to grind off part of the outer region of an extruded honeycomb and then apply additional material to the

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remaining outer periphery as illustrated in Fig. 2(b) copied below.

The first technique is described at page 12, lines 16 to page 13, line 3, of the present specification; in that instance, the extruded thickness of the outer circumferential wall portion is 0.25 mm. The same raw material was then slurried and applied on the outer circumferential wall portion as shown in Figs. 1(a) and 1(b) to provide an outer wall thickness of about 1.25 mm. The data in Table 2 show the superior results obtained. Applicant's process of making is unique (patentably so) and the resulting products form an entirely different structure from that of Machida et al '446. There clearly is no teaching of the instant invention in Machida et al. '446.

Claims 2 and 6 further define preferred features of the resulting ceramic honeycomb structure and are patentable for the same reasons that claim 1 is patentable.

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8. Claims 1 and 2 were rejected under 35 USC 103(a) as unpatentable over Kotani et al. '067 in view of Kumazawa et al. '899. This rejection is traversed.

Kotani et al. '067 describes a ceramic honeycomb structure with grooves and an outer coating. The Examiner describes the reference thusly:

Kotani further teaches an outer coating formed on the outer surface of the body to reduce cells from cracking (see col. 2, lines 28-38) but is silent to the thermal expansion coefficient of the outer coating on the body wall being larger than the thermal expansion coefficient of an inside partition wall.

After describing the secondary reference Kumazawa et al. '899 below, the Examiner contends that it would have been obvious to include the gamma-alumina of Kumazawa et al. '899 in the Kotani et al. '067 coating composition because the gamma-alumina would provide excellent thermal shock resistance.

The critical question regarding the proposed combination of references in this rejection is why would an artisan want or have any reason to provide thermal shock resistance to the structures of Kotani et al. '067? The coating is applied in Kotani et al. '067 to reduce cell cracking. But such cracking is not disclosed to be due to subsequent thermal treatments which are provided by thermal stress or thermal shock. Instead, the cracks are formed

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due to the low mechanical strength of the honeycomb structure (green body) during extrusion. See col. 2, lines 12-29. Thus, there is no motivation to combine the features of Kumazawa et al '899 relating to thermal shock resistance with Kotani et al. '067, which does not employ its coating for any thermal shock resistance reasons.

Kumazawa et al. '899 relates to a ceramic honeycomb catalyst having an excellent thermal shock resistance in which a carrier is coated on the inside of a ceramic honeycomb structural body, the catalyst having a mean thermal expansion coefficient in a range from 40° to 800°C. of smaller than  $0.7 \times 10^{-6}/^{\circ}\text{C}$ . See the Abstract. This result (excellent thermal shock resistance) is achieved by heat treating a carrier-coated ceramic honeycomb structural body at a temperature of 900°-1100°C.

Kumazawa et al. '899 merely teaches how to reduce the increase in the thermal expansion coefficient when the catalyst is loaded because the thermal expansion coefficient increases when the catalyst is loaded. Applicant finds no teaching in the portion of Kumazawa et al. '899 cited by the Examiner (Table 1 and col. 3, line 65 to col. 4, line 46) that:

the thermal expansion of the inner body is smaller than the thermal expansion coefficient of the outer carrier coating (which is on the outer body wall).

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Indeed, Kumazawa et al. '899 is silent regarding the thermal expansion coefficient difference between the inside partition wall portion and the outer circumferential wall portion.

The Kumazawa et al. '899 disclosure is described extensively in Section 4 above discussing the corresponding EP patent. There is no support in the publication for coating the outside of the honeycomb structural body.

In the Response to Argument, the Examiner states that recognition by applicant of "another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious." But as pointed out above, Kumazawa et al. '899 adds no material on the outside surface of the honeycomb structural body and thus the reference provides new motivation to change the nature of the coating used in Kotani et al.

Applicant accordingly and appropriately submits that there can be no proper combination of these two references to lead to the honeycomb structure of claims 1 and 2. Accordingly, review and withdrawal of this rejection is requested.

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9. Claims 4 and 5 were rejected under 35 USC 103(a) as unpatentable over Machida et al. '446 in view of Kotani et al. '067. The rejection is traversed as well.

As discussed previously, Machida et al. '446 provides no teaching or suggestion that the thermal expansion coefficient, when measured in the diameter direction, of the outer circumferential wall is to be greater than the coefficient of the inside partition wall portion.

As discussed previously, Kotani et al. '067 fails also to teach or suggest the presently claimed thermal expansion coefficient relationship between the outer circumferential wall and the inside partition wall portion. Accordingly, there can be no proper combination of these two references to render obvious the subject matter of claims 4 and 5 which depend from claim 1. Review and reconsideration of this rejection are requested.

10. Claims 3-5 were rejected under 35 USC 103(a) as unpatentable over Machida et al. '446 in view of Kotani et al. '067 and further in view of Beauseigneur et al. '722. This rejection is traversed as well.

The deficiencies of Machida et al. '446 and Kotani et al. '067 in combination to suggest the claimed honeycomb structure have been discussed previously.

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Beauseigneur et al. '722 is cited for disclosing several examples of honeycomb structures having a range of the numbers of cells per unit area values and typical wall thickness requirements as recited in instant claims 3-5. However, because Beauseigneur et al. '722 provides no teaching or suggestion that the thermal expansion coefficient, when measured in the diameter direction, of the outer circumferential wall is to be greater than the coefficient of the inside partition wall portion, Beauseigneur et al. '722 cannot overcome the deficiencies of the two primary references. Accordingly, there can be no proper combination of these three references to deny patentability to claims 3-5.

It appears claim 7 is also rejected over these three references; see Section 11 of the Office Action which follows the rejection of claims 3-5 in Section 10. However, because claim 7 depends from claim 1, claim 7 is also patentable because the three references fail to teach the basic honeycomb structure of claim 1. The rejection should be withdrawn.

In the Response to Argument section, the Examiner cites cases for the proposition that "one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references." However, there must be some motivation to combine the references.

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The third paragraph of MPEP 2143.01, "Suggestion or Motivation To Modify the References", states:

Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. "The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art." In re Kotzab, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000). See also In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); In re Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

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In the instant case, there is no teaching or suggestion that the thermal expansion coefficient, when measured in the diameter direction, of the outer circumferential wall is to be greater than the coefficient of the inside partition wall portion. Accordingly, review and withdrawal of all rejections is requested.

Applicant respectfully submits that the application is now in condition for allowance. Accordingly, the Examiner is requested to issue a Notice of Allowance for all pending claims.

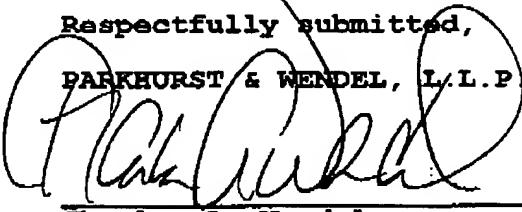
Should the Examiner deem that any further action by applicant would be desirable for placing this application in even better condition for issue, the Examiner is requested to telephone applicant's attorney at the number listed below.

March 3, 2003  
Date

CAW:EC/dlb

Attorney Docket No.: WATK:210  
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Serial No.: 09/803,941

Atty. Docket No.: WATK:210

Version with Markings to Show Changes Made

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What is claimed is:

1. (Twice Amended) A ceramic honeycomb structure comprising a plurality of through-holes surrounded by partition walls, wherein a thermal expansion coefficient of an outer circumferential wall portion in the ceramic honeycomb structure is larger than a thermal expansion coefficient, in a direction of a diameter, of an inside partition wall portion in the ceramic honeycomb structure, and stress is applied to the inside partition wall portion from the outer circumferential wall portion, and wherein a raw material for said outer circumferential wall is given in a thickness sufficient to apply a stress to the inside partition walls from the outer circumferential wall around a whole surface of the outer circumferential wall.
2. A ceramic honeycomb structures as defined in claim 1, wherein a material for the outer circumferential wall portion of the ceramic honeycomb structure is the same as or different from a material for the ceramic honeycomb structure.
3. A ceramic honeycomb structure as defined in claim 1, wherein a partition wall of the ceramic honeycomb structure has a thickness of less than 0.1mm.
4. A ceramic honeycomb structure as defined in claim 1, wherein the ceramic honeycomb structure has 62 cells/cm<sup>2</sup> or